REMARKS

I. INTRODUCTION

Applicant thanks the Examiner for carefully considering the subject application. Applicant has amended claims 5, 6, 9, 11 and cancelled claims 12, 13. Claims 5-11 are presently pending in the application. Applicant believes that all of the pending claims 5-11 are allowable and respectfully requests further examination of the claims in view of the following arguments.

II. REJECTION OF CLAIM 5 UNDER 35 U.S.C. 102(b)

Claim 5 stands rejected under 35 U.S.C. 102(b) as being anticipated by Okada et al. (U.S. Patent 6,497,846). Applicant respectfully submits that the rejection of claim 5, as amended, is improper because Okada does not teach all of the limitations of claim 5.

Independent claim 5, as amended, recites:

> 5. A method for controlling an air-fuel ratio in an internal combustion engine, comprising the steps:
>
> determining a temperature of an emission control device downstream of said engine;
>
> oxidizing hydrocarbons stored in said device when said temperature of said device is greater than a predetermined temperature; and
>
> adjusting the air/fuel ratio in the engine rich of stoichiometry during oxidation of said hydrocarbons.

Referring to Okada, an exhaust gas purifying system for an engine is described. The system controls an engine so that

excess hydrocarbons are discharged into an exhaust gas passageway. See column 5, lines 29-31. Thereafter, the hydrocarbons are burned in the passageway to raise the temperature of a catalyst component in a catalytic converter. See column 5, lines 32-40. When the temperature of the catalyst component in the converter reaches activation level (a temperature when the catalyst component is capable of oxidizing hydrocarbons), the supply of the additional fuel from a fuel injector in the engine is stopped. In other words, Okada teaches that the air-fuel ratio should be set to an non-rich air-fuel ratio during oxidation of the hydrocarbons. Thus, Okada fails to teach the step of "adjusting the air/fuel ratio in the engine rich of stoichiometry during oxidation of said hydrocarbons" as recited in claim 5.

Because Okada fails to teach all of the limitations of independent claim 5, Applicant submits the rejection of claim 5 under 35 U.S.C. 102(b) is improper. Accordingly, Applicant respectfully requests the rejection of claim 5 be withdrawn.

III. REJECTION OF CLAIMS 9, 10 UNDER 35 U.S.C. 102(e)

The Examiner has rejected claims 9, 10 under 35 U.S.C. 102(e) based on Tengblad et al. (U.S. Patent 5,867,982). Applicant respectfully submits that the rejection of claims 9, 10, as amended, is improper because Tengblad does not teach all of the limitations of claims 9, 10.

Independent claim 9, as amended, recites:

9. A system for controlling an air-fuel ratio in an internal combustion engine, comprising:

a hydrocarbon trap positioned in an exhaust path downstream of the engine;

an air supply device capable of delivering air to said exhaust path upstream of said hydrocarbon trap for oxidizing hydrocarbons stored in said trap;

a temperature sensor generating a signal indicative of a temperature of said trap; and

a controller configured to induce said device to deliver said air to said trap when said temperature signal indicates a temperature of said trap is greater than a predetermined temperature, said controller further configured to adjust the air/fuel ratio in the engine rich of stoichiometry during said air delivery.

Referring to Tengblad, the reference discloses a system for reducing emissions in a catalytic converter exhaust system for an engine. Tengblad discloses operating an engine rich of stoichiometry and then supplying secondary air to the enriched exhaust gases to obtain a lean air-fuel ratio upstream of a catalyst. Tengblad, however, does not teach using a controller configured to induce an air supply device to deliver air to a hydrocarbon trap when a temperature signal indicates a temperature of the trap is greater than a predetermined temperature, as recited in claim 9. Tengblad does not even monitor the temperature of any emission device nor provide any temperature sensor to do so. Accordingly, Tengblad fails to teach all of the limitations of claim 9.

Because Tengblad fails to teach all of the limitations of independent claim 9, Applicant submits the rejection of independent claim 9 and dependent claim 10 under 35 U.S.C. 102(e) is improper. Accordingly, Applicant respectfully requests the rejection of claims 9, 10 be withdrawn.

IV. REJECTION OF CLAIMS 6,7 UNDER 35 U.S.C. 103(a)

The Examiner has rejected claims 6, 7 under 35 U.S.C. 103(a) using the combination of Okada et al. and Hirota et al. (U.S. Patent 6,367,246). Applicant has amended claim 6. Applicant submits that the rejection of claims 6, 7 is improper because the proposed combination fails to teach all of the limitations of claims 6, 7.

As discussed above for independent claim 5, from which claims 6, 7 depend, Okada fails to teach the step of "adjusting the air/fuel ratio in the engine rich of stoichiometry during oxidation of said hydrocarbons" as recited in claim 5. Further, Hirota also fails to teach this step. Accordingly, even if the proposed combination were attempted, the combination fails to teach all of the limitations of independent claim 5 and dependent claims 6, 7.

Because the proposed combination fails to teach all of the limitations of claims 6, 7, Applicant respectfully submits that the rejection of claims 6, 7 under 35 U.S.C. 103(a) is improper. Accordingly, Applicant requests that the rejection of claims 6, 7 be withdrawn.

V. REJECTION OF CLAIMS 11, 12 UNDER 35 U.S.C 103(a)

The Examiner has rejected claims 11, 12 under 35 U.S.C. 103(a) based on Hirota et al. Applicant has amended claim 11 and cancelled claim 12. Applicant submits that the rejection of claim 11 is improper because Hirota fails to teach all of the limitations of claim 11.

Independent claim 11, as amended, recites:

> 11. A method for controlling an engine, said engine communicating with a first emission control device, said first emission control device communicating with a second emission control device, said method comprising:
>
> determining a temperature of said second emission control device;
>
> combusting an air-fuel mixture rich of stoichiometry in an engine cylinder to reduce NOx stored in said first emission control device; and
>
> applying oxygen upstream of said second emission control device to oxidize hydrocarbons stored in said second emission control device and hydrocarbons from said combusted rich air-fuel mixture when said temperature of said second emission control device is greater than a predetermined temperature.

Referring to Hirota, the reference discloses a particulate filter that includes a NOx absorbent and an HC absorbent. Hirota also discloses a method of regenerating the filter. However, Hirota does not monitor the temperature of the particulate filter. Accordingly, Hirota does not teach the step of "determining a temperature of said second emission control device" as recited in claim 11. Further, Hirota does not teach

the step of applying oxygen upstream of a second emission control device... "when said temperature of said second emission control device is greater than a predetermined temperature" as recited in claim 11.

Because the combination fails to teach all of the limitations of independent claim 11, Applicant respectfully submits that the rejection of claim 11 under 35 U.S.C. 103(a) is improper. Accordingly, Applicant requests that the rejection of claim 11 be withdrawn.

VI. REJECTION OF CLAIM 13 UNDER 35 U.S.C 103(a)

The Examiner has rejected claim 13 based on Hirota et al. and Karlsson et al. Applicant has cancelled claim 13.

VII. CONCLUSION

For the above-cited reasons, all the claims presently pending in this application are believed to be allowable. If the Examiner has any further questions or concerns regarding this matter, he is invited to call the Applicant's under signed attorney.

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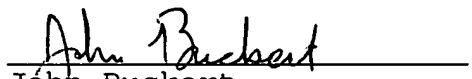
Respectfully submitted,



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MARKED-UP VERSION OF AMENDED CLAIMS

5. A method for controlling an air-fuel ratio in an internal combustion engine, comprising the steps:

[purging hydrocarbons from an emission control device]

determining a temperature of an emission control device downstream of said engine;

oxidizing hydrocarbons stored in said device when said temperature of said device is greater than a predetermined temperature; and

adjusting the air/fuel ratio in the engine rich of stoichiometry [while purging the hydrocarbons] during oxidation of said hydrocarbons.

6. The method of claim 5, wherein said [purging] oxidation step comprises providing air from an air supply device to an exhaust stream upstream of said [hydrocarbon trap] emission control device.

9. A system for controlling an air-fuel ratio in an internal combustion engine, comprising:

a hydrocarbon trap positioned in an exhaust path downstream of the engine;

an air supply device capable of [selectively providing a supply of] delivering air to said exhaust path upstream of said hydrocarbon trap for oxidizing hydrocarbons stored in said trap;

a temperature sensor generating a signal indicative of a temperature of said trap;

and

a controller configured to induce said device to deliver said air to said trap when said temperature signal indicates a

temperature of said trap is greater than a predetermined temperature, said controller further configured to adjust [for biasing] the air/fuel ratio in the engine rich of stoichiometry during said air delivery [during a time period when said air pump is providing air to said exhaust path].

11. A method for controlling an engine, said engine communicating with a first emission control device, said first emission control device communicating with a second emission control device, said method comprising:

determining a temperature of said second emission control device;

combusting an air-fuel mixture rich of stoichiometry in an engine cylinder to reduce NOx stored in said first emission control device; and

applying oxygen upstream of said second emission control device to oxidize hydrocarbons stored in said second emission control device and hydrocarbons from said combusted rich air-fuel mixture when said temperature of said second emission control device is greater than a predetermined temperature.